

IN THE CLAIMS:

1. (Currently Amended) A process for detecting a complementary DNA fragment which comprises the steps of:

preparing a radiation image storage panel which has divided stimuable phosphor layers containing a stimuable phosphor;

bringing single-stranded sample DNA fragments having a radioactive label in a liquid phase into contact with a DNA micro-array having a support and at least two defined areas in each of which a group of probe compounds selected from the group consisting of DNA molecules, DNA fragments, synthesized oligonucleotides, synthesized polynucleotides, and PNA are fixed under such condition that a group of the probe compounds fixed in one area differs from a group of the probe compounds fixed in another area, so that DNA fragments complementary to a group of the probe compounds are fixed by hybridization to the area in which the last-mentioned group is fixed;

removing unfixed sample DNA fragments from the DNA micro-array;

keeping the DNA micro-array in contact with ~~a~~ with the radiation image storage panel under such condition that the areas of DNA micro-array in which groups of the probe compounds are fixed face the divided stimuable phosphor layers of the radiation image storage panel, whereby the divided stimuable phosphor layers ~~which has divided stimuable phosphor layers containing a stimuable phosphor in areas corresponding to the~~

~~areas on which groups of the probe compounds are fixed, so that the corresponding areas of the stimuable phosphor sheet can absorb and store radiation energy of the radioactive label coming from the DNA fragments fixed to the DNA micro-array;~~

irradiating the radiation image storage panel with a stimulating light, so that the image storage panel releases a stimulated emission from the area divided phosphor layers in which the radiation energy is stored;

detecting the stimulated emission photoelectrically to obtain a series of electric signals; and

processing the electric signals to locate the area in which the complementary DNA fragments are fixed.

2. (Previously Presented) The process of claim 1, in which area on the radiation image storage panel other than the areas of stimuable phosphor layers is covered by a physical barrier member made of non-radiation transmitting material selected from the group consisting of metal, ceramic material, and polymer material.

3. (Original) The process of claim 1, in which the radiation image storage panel is irradiated with a stimulating light after it is separated from the DNA micro-array.

4. - 5. (Cancelled)

6. (Currently Amended) A process for detecting a complementary DNA fragment which comprises the steps of:

preparing a radiation image storage panel which has divided stimuable phosphor layers containing a stimuable phosphor;

bringing single-stranded sample DNA fragments having a radioactive label in a liquid phase into contact with a gridded DNA micro-array on a solid support having at least two defined areas in each of which a group of probe compounds selected from the group consisting of DNA molecules, DNA fragments, synthesized oligonucleotides, synthesized polynucleotides, and PNA are fixed under such condition that a group of the probe compounds fixed in one area differs from a group of the probe compounds fixed in another area, so that DNA fragments complementary to a group of the probe compounds are fixed by hybridization to the area in which the probe compounds are fixed;

removing unfixed sample DNA fragments from the DNA micro-array;

keeping the DNA micro-array in contact with ~~a~~ with the radiation image storage panel under such condition that the areas of DNA micro-array in which groups of the probe compounds are fixed face the divided stimuable phosphor layers of the radiation image storage panel, whereby the divided stimuable phosphor layers ~~which has divided stimuable phosphor layers~~

~~containing a stimuable phosphor in areas corresponding to the areas on which groups of the probe compounds are fixed, so that the corresponding areas of the stimuable phosphor sheet can absorb and store radiation energy of the radioactive label coming from the DNA fragments fixed to the DNA micro-array;~~

irradiating the radiation image storage panel with a stimulating light, so that the image storage panel releases a stimulated emission from the area divided phosphor layers in which the radiation energy is stored;

detecting the stimulated emission photoelectrically to obtain a series of electric signals; and

processing the electric signals to locate the area in which the complementary DNA fragments are fixed.

7. (Previously Presented) The process of claim 2, wherein the material is selected from the group consisting of stainless steel, aluminum, copper, brass, aluminum oxide, magnesium oxide, silicon nitride, carbon, polyethylene terephthalate, polyethylene naphthalate, polyurethane and acrylic resin.